

Amendments to the Claims:

1-24. (Withdrawn).

25. (Currently Amended) A solid phase product comprising a solid phase for use in a method in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ionizable groups, wherein the ionizable groups are immobilized on a the solid support phase and are effective at a first pH at which the ionizable groups are positively charged to bind nucleic acid present in a sample and are effective to release the nucleic acid at a second, higher, pH at which the charge on the ionizable groups is negative, neutral or less positive, the ionizable groups being provided by a chemical species selected from the group consisting of biological buffers, polyhydroxylated amines, histidine and polyhistidine, wherein said plurality of positively ionizable groups have a pKa between about 4.5 and about 8.5.

26. (Currently Amended) A product according to claim 25, wherein the plurality of positively charged groups are provided by a biological buffer which is selected from the group consisting of:

N-2-acetamido-2-aminoethanesulfonic acid (ACES);

N-2-acetamido-2-iminodiacetic acid (ADA);

~~amino methyl propanediol (AMP),~~
~~3-1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic acid (AMPSO),~~
N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES) ;
N,N-bis-2-hydroxyethylglycine (BICINE) ;
bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) ;
1,3-bistrishydroxymethylaminopropane (Bis-Tris Propane) ;
~~4-cyclohexylamino-1-butane sulfonic acid (CABS),~~
~~3-cyclohexylamino-1-propane sulfonic acid (CAPS),~~
~~3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO),~~
~~2-N-cyclohexylaminoethanesulfonic acid (CHES),~~
3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO) ;
-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS) ;
-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS) ;
-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES) ;
-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO) ;
2-N-morpholinoethanesulfonic acid (MES) ;
4-N-morpholinobutanesulfonic acid (MOBS) ;
3-N-morpholinopropanesulfonic acid (MOPS) ;
3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO) ;
piperazine-N-N-bis-2-ethanesulfonic acid (PIPES) ;
piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO) ;
~~N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid (TABS),~~
N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid

(TAPS) ;

3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic acid (TAPSO) ;

N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES) ;

N-trishydroxymethylmethyglycine (TRICINE) ;

trishydroxymethylaminomethane (Tris) ;

polyhydroxylated imidazoles; and

triethanolamine dimers and polymers.

27. (Currently Amended) A product according to claim 25, wherein the plurality of ~~ionisable ionizable~~ groups are separately immobilised on a solid support by covalent or ionic bonding or by adsorption.

28. (Currently Amended) A product according to claim 25, wherein the plurality of ~~ionisable ionizable~~ groups are separately attached to a polymer, said polymer being immobilised on a solid support by covalent or ionic bonding or by adsorption.

29. (Currently Amended) A product according to claim 25, wherein the ~~ionisable ionizable~~ groups are polymerised, optionally by means of cross-linking reagents.

30. (Original) A product according to claim 29, wherein the polymer is immobilised on a solid support by covalent or ionic bonding or by adsorption.

31. (Original) A product according to claim 29, wherein the polymer is a solid.

32. (Original) A product according to claim 29 which is a container.

33. (Previously Amended) A container according to claim 32 which is a polymerase chain reaction or storage tube or well, or a pipette tip.

34. (Currently Amended) A water soluble product for use in a method of extracting nucleic acid from a sample, the product comprising a plurality of positively ionizable groups, the ionizable groups being provided by a biological buffers;
wherein the plurality of ionizable groups are (i) separately attached to a polymer or (ii) polymerised polymerized, optionally by means of cross-linking reagents or (iii) separately attached to a polymer and polymerized, optimally by means of cross-linking reagents; and wherein said plurality of positively ionizable groups have a pKa between about 4.5 and 8.5 and the biological buffer is selected from the group consisting of:
N-2-acetamido-2-aminoethanesulfonic acid (ACES);
N-2-acetamido-2-iminodiacetic acid (ADA);
~~amino methyl propanediol (AMP);~~
~~3-1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic~~

acid (AMPSO);

N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES);

N,N-bis-2-hydroxyethylglycine (BICINE);

bis-2-hydroxyethyliminotriethylhydroxymethylmethane (Bis-Tris);

1,3-bistrishydroxymethylmethyldiaminopropane (Bis-Tris

Propane);

~~4-cyclohexylamino-1-butane sulfonic acid (CABS);~~

~~3-cyclohexylamino-1-propane sulfonic acid (CAPS);~~

~~3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO);~~

~~2-N-cyclohexylaminoethanesulfonic acid (CHES);~~

3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO);

-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS);

-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS);

-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES);

-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO);

2-N-morpholinoethanesulfonic acid (MES);

4-N-morpholinobutanesulfonic acid (MOBS);

3-N-morpholinopropanesulfonic acid (MOPS);

3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO);

piperazine-N-N-bis-2-ethanesulfonic acid (PIPES);

piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO);

~~N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid (TABS);~~

N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid (TAPS);

3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic

acid (TAPSO);

N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES);

N-trishydroxymethylmethyglycine (TRICINE);

trishydroxymethylaminomethane (Tris);

polyhydroxylated imidazoles; and

triethanolamine dimers and polymers.

35-37. (Cancelled).

38-41. (Withdrawn).

42. (Currently Amended) A solid phase product comprising a solid phase for use in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ionisable-ionizable groups, wherein the ionisable-ionizable groups are immobilised on a-the solid support phase and are capable at a first pH at which the ionisable-ionizable groups are positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ionisable-ionizable groups is negative, neutral or less positive, wherein said plurality of positively ionizable groups have a pKa between about 4.5 and about 8.5, the ionisable-ionizable groups being provided by a biological buffer selected from the group consisting of:

N-2-acetamido-2-aminoethanesulfonic acid (ACES);

N-2-acetamido-2-iminodiacetic acid (ADA) ;
~~amino methyl propanediol (AMP)~~ ;
~~3=1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic acid (AMPSO)~~ ;
N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES) ;
N,N-bis-2-hydroxyethylglycine (BICINE) ;
bis-2-hydroxyethyliminotrihydroxymethylmethane (Bis-Tris) ;
1,3-bistrishydroxymethylmethylethylaminopropane (Bis-Tris Propane) ;
~~4-cyclohexylamino-1-butane sulfonic acid (CABS)~~ ;
~~3-cyclohexylamino-1-propane sulfonic acid (CAPS)~~ ;
~~3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO)~~ ;
~~2-N-cyclohexylaminoethanesulfonic acid (CHES)~~ ;
3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO) ;
N-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS) ;
N-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS) ;
N-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES) ;
N-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO) ;
2-N-morpholinoethanesulfonic acid (MES) ;
4-N-morpholinobutanesulfonic acid (MOBS) ;
3-N-morpholinopropanesulfonic acid (MOPS) ;
3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO) ;
piperazine-N-N-bis-2-ethanesulfonic acid (PIPES) ;
piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO) ;
~~N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid~~

(TABS);

N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid

(TAPS);

3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic acid (TAPSO);

N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES);

N-trishydroxymethylmethyglycine (TRICINE);

trishydroxymethylaminomethane (Tris);

polyhydroxylated imidazoles; and

triethanolamine dimers and polymers.

43. (Previously Added) A product according to claim 42, wherein the biological buffer is bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris).

44. (Currently Amended) A product according to claim 42, wherein the plurality of ~~ionisable~~ionizable groups are separately immobilised on a solid support by covalent or ionic bonding or by adsorption.

45. (Currently Amended) A product according to claim 42, wherein the plurality of ~~ionisable~~ionizable groups are separately attached to a polymer, said polymer being immobilised on a solid support by covalent or ionic bonding or by adsorption.

46. (Currently Amended) A product according to claim 42, wherein the ~~ionisable~~ionizable groups are polymerised, optionally by means of cross-linking reagents.

47. (Previously Added) A product according to claim 46, wherein the polymer is immobilised on a solid support by covalent or ionic bonding or by adsorption.

48. (Previously Added) A product according to claim 42, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

49. (Previously Added) A product according to claim 48, wherein the solid phase is magnetic beads.

50. (Previously Added) A product according to claim 48, wherein the solid phase is paramagnetic beads.

51. (Currently Amended) A ~~solid phase~~ product comprising a solid phase for use in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ~~ionisable~~ionizable groups, wherein the ~~ionisable~~ionizable groups are immobilised on ~~a~~the solid support phase and are capable at a first pH at which the ~~ionisable~~ionizable groups are

positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ionisable ionizable groups is negative, neutral or less positive, the ionisable ionizable groups being provided by bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) and having a pKa between about 4.5 and 8.5.

52. (Previously Added) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately immobilised on a solid support by covalent or ionic bonding or by adsorption.
53. (Previously Added) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately attached to a polymer, said polymer being immobilised on a solid support by covalent or ionic bonding or by adsorption.
54. (Previously Added) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) is polymerised, optionally by means of cross-linking reagents.
55. (Previously Added) A product according to claim 54, wherein the polymer is immobilised on a solid support by covalent or ionic bonding or by adsorption.

56. (Previously Added) A product according to claim 51, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

57. (Previously Added) A product according to claim 56, wherein the solid phase is magnetic beads.

58. (Previously Added) A product according to claim 56, wherein the solid phase is paramagnetic beads.

59. (Currently Amended) A ~~solid phase~~ product comprising a solid phase for use in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ~~ionisable~~ionizable groups, wherein the ~~ionisable~~ionizable groups are immobilised on ~~a~~the ~~solid support phase~~ and are capable at a first pH at which the ~~ionisable~~ionizable groups are positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ~~ionisable~~ionizable groups is negative, neutral or less positive, the ~~ionisable~~ionizable groups being provided by bis-2-hydroxyethyliminotrihydroxymethylmethane (Bis-Tris) and having a pKa between about 4.5 and 8.5, and the solid phase

is comprises beads.

60. (Previously Added) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately immobilised on the beads by covalent or ionic bonding or by adsorption.
61. (Previously Added) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately attached to a polymer, said polymer being immobilised on the bead by covalent or ionic bonding or by adsorption.
62. (Previously Added) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) is polymerised, optionally by means of cross-linking reagents.
63. (Currently Amended) A product according to claim 59~~62~~, wherein the polymer-polymerized Bis-Tris is immobilised on the beads by covalent or ionic bonding or by adsorption.
64. (Previously Added) A product according to claim 59, wherein the solid phase is magnetic beads.
65. (Previously Added) A product according to claim 59, wherein the solid phase is paramagnetic beads.

66. (Previously Added) A product according to claim 25, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

67. (Previously Added) A product according to claim 66, wherein the solid phase is magnetic beads.

68. (Previously Added) A product according to claim 66, wherein the solid phase is paramagnetic beads.

69. (New) A product according to claim 25, wherein the pKa of the plurality of ionizable groups is between 5.0 and 6.5.

70. (New) A product according to claim 34, wherein the pKa of the plurality of ionizable groups is between 5.0 and 6.5.

71. (New) A product according to claim 42, wherein the pKa of the plurality of ionizable groups is between 5.0 and 6.5.

72. (New) A product according to claim 51, wherein the pKa of the plurality of ionizable groups is between 5.0 and 6.5.

73. (New) A product according to claim 59, wherein the pKa of the plurality of ionizable groups is between 5.0 and 6.5.